FIG. 1

CPU — 102

ROM — 104
BIOS — 106

RAM — 108
Application Programs
WWW Browser
Operating System

Hard Disk Drive — 118

CD-ROM / DVD-ROM Drive — 122

I/O Interface — 120

Network Interface Unit — 124

Video Display Adapter

— 105

100 — (computer front panel / monitor)

100 — 126
128
130

Modem — 132

— 100

Local Area Network — 136

Internet — 138

Internet Service Provider — 134

Host — 140

WWW/FTP Server — 142

Scripts — 144

JAVA Apps. — 146

Web Pages — 150

Data Files

Data Bases — 152

FIG. 2

FIG. 3

Fig. 4A

Fig. 4B

Fig. 5

Lungfish - Microsoft Internet Explorer provided by Internet Security Systems

File   Edit   View   Favorites   Tools   Help

POLICY   ASSETS   FIXES   ALERTS   SAFELINK   INCIDEN

Incident   Investigation   Response   Configure   — 440

Report   View   Search   Edit

Search Results — 605

You can click on the Incident ID to edit the incident, click on the Incident Name to view the incident.

— 610

ID	Status	Incident Name	Incident Date	Report Date
9545203315553	In Investigation	Test Incident1	03/01/2000 06:57:00 PM	03/31/2000 11:32:11 AM
9559944014B0	New	DDoS Attack onEBay.com	04/17/2000 01:52:03 PM	04/17/2000 02:00:01 PM
9560022249963	New	Test Incident	04/17/2000 04:09:39 PM	04/17/2000 04:10:49 PM
9561491774445	New	Test Apache	04/19/2000 08:55:00 AM	04/19/2000 08:59:37 AM
9561722920G3	New	Test Apache	04/19/2000 08:55:00 AM	04/19/2000 03:24:52 PM
9561723341B3	New	Test Apache	04/19/2000 08:55:00 AM	04/19/2000 03:25:34 PM
9561746663657	New	Alert Test Again	04/19/2000 04:03:00 AM	04/19/2000 04:04:26 PM
9599981258675	New	testsecurity	06/02/2000 05:26:00 AM	06/02/2000 05:27:38 PM
9634106162555	New	Test IncidentHandler	07/01/2000 10:02:00 AM	07/12/2000 10:03:36 AM
9634140777562	New	Denial of Service Attack 3	07/01/2000 11:00:00 AM	07/12/2000 11:01:17 AM
9639273741B5	In Investigation	DDoS Attack on Major Internet Sites	07/18/2000 09:32:00 AM	07/18/2000 09:36:14 AM
9639299615578	In Investigation	DDoS Attack on Major Internet Sites	07/18/2000 10:10:00 AM	07/18/2000 10:13:35 AM
9639931422647	In Investigation	DDoS Attack on Major Internet Sites	07/18/2000 10:40:00 AM	07/18/2000 10:43:42 AM

615

600

Done   Local intranet

Fig. 6

Lungfish - Microsoft Internet Explorer provided by Internet Security Systems

File Edit View Favorites Tools Help

POLICY ASSETS FIXES ALERTS SAFELINK INCIDENT

ISS

Incident Investigation Response Configure

Procedure Tools Action Records Document 725

710

715 730 720

Procedure: DoS Investigation Procedure

Procedure - DoS Investigation Procedure

Click the hyperlink of the steps that you would like to execute.

750

Run Whols
755
RunNMap

Run Traceroute

Run NSLookup

Incident: 963931422647-07/18/2000 10:40:00 AM-DDoS Attack on Major Internet Sites

745

DDoS Attack on Major Internet Sites

Incident:
Incident Reported   07/18/2000 10:43:42 AM
Incident Happened   07/18/2000 10:40:00 AM
Description: Several major internet sites, such as YAHOO.com, AMAZON.com, are attacked by a group of hackers using "Distributed Denial of Service" attack.
Reporter Name: rixin (Rixin Ge)

Show Action Records In: ● Ascending Order   ○ Descending Order

Expand All   Close All

Action Name	Begin Time	Finish Time	User
⊞ Run Whols	07/18/2000 10:52:07 AM	07/18/2000 10:52:12 AM	rixin
⊞ RunNMap	07/18/2000 10:52:29 AM	07/18/2000 10:52:33 AM	rixin
⊟ Run NSLookup	07/18/2000 10:53:00 AM	07/18/2000 10:53:02 AM	rixin

Server: goliath.iss.net
Address: 208.21.2.12

Non-authoritative answer:
Name: aol.com
Addresses: 205.188.146.23, 205.188.160.121
Aliases: www.aol.com

760

Add Comments

Fig. 7

Lungfish - Microsoft Internet Explorer provided by Internet Security Systems

File Edit View Favorites Tools Help

POLICY ASSETS FIXES ALERTS SAFELINK INCIDENT

ISS

Incident · Investigation Response Configure

Procedure Tools Action Records Document

800

725

Incident: 96393142647–07/18/2000 10:40:00 AM–DDoS Attack on Major Internet Sites

Document Action Result

Please select an incident, add the relevant information to document and then click the "Document Result" button. (The fields marked as * are required fields.)

*Select An Incident
96393142647–07/18/2000 10:40:00 AM–DDoS Attack on Major Internet Sites

*Action Taken: Call FBI

*Action Date & Time: 2000-07-18 10:55:58

*Result Date & Time: 2000-07-18 10:55:58

*Results

FBI was informed of this incident and investigation progress.

810

Document Result

Procedure: DoS Investigation Procedure

Procedure - DoS Investigation Procedure

Click the hyperlink of the steps that you would like to execute

Run Whois — 750

RunNMap — 755

Run Traceroute

Run NSLookup

Call FBI — 805

Local intranet

Fig. 8

Lunglish - Microsoft Internet Explorer provided by Internet Security Systems

File Edit View Favorites Tools Help

POLICY ASSETS FIXES ALERTS SAFELINK INCIDENT

ISS

Incident Investigation Response Configure

Report View 425 435 Search Edit

900

910

DDoS Attack on Major Internet Sites

Incident:

Incident Reported:	07/18/2000 10:43:42 AM
Incident Happened:	07/18/2000 10:40:00 AM
Description:	Several major internet sites, such as YAHOO.com, AMAZON.com, are attacked by a group of hackers using "Distributed Denial of Service" attack.
Reporter Name:	rixin (Rixin Ge)

Show Action Records In: ⊙ Ascending Order ○ Descending Order

Expand All Close All

Action Name	Begin Time	Finish Time	User
⊞ Run WhoIs	07/18/2000 10:52:07 AM	07/18/2000 10:52:12 AM	rixin
⊞ RunNMap	07/18/2000 10:52:29 AM	07/18/2000 10:52:33 AM	rixin
⊞ Run NSLookup	07/18/2000 10:53:00 AM	07/18/2000 10:53:02 AM	rixin
⊟ Call FBI	07/18/2000 10:55:58 AM	07/18/2000 10:55:58 AM	rixin
FBI was informed of this incident and investigation progress.			

View Incident

96393142264?–07/18/2000 10:40:00 AM–DDoS Attack on M

920

Incident Name:	DDoS Attack on Major Internet Sites
Report Date:	2000-07-18 10:43:42.0
Incident Date:	2000-07-18 10:40:00.0
Created By:	rixin
	Rixin Ge
	Engineering, SMA
	(678)443-6097
	rge@iss.net
Incident Type:	Intrusion
Target OS Type :	Unknown
External Attacker:	Yes
Entry Point:	Network
Scope:	Multiple Hosts
Severity :	High
Damage Type :	Server Low Performance
Incident Status:	In Progress
Category:	Denial of Service Attack
State:	In Investigation

905

915

Fig. 9

Lungfish - Microsoft Internet Explorer provided by Internet Security Systems

File   Edit   View   Favorites   Tools   Help

POLICY   ASSETS   FIXES   ALERTS   SAFELINK   INCIDENT

ISS

Report

Incident   Investigation   Response   Configure

View   Search   Edit

425

1000

1005

Update Incident "DDoS Attack on Major Internet Sites" (ID:963931422647)

Reported At: 07/18/2000 10:43:42 AM   Reported By: nixin

*Incident Name: DDoS Attack on Major Internet Sites   Incident Date: 1998 / 7 / 2

*State: In Investigation   Incident Time: 10 : 40

*Incident Status: In Progress   *Severity: High

*Scope: Multiple Hosts   *Category: Denial of Service Attack

Attack IP Addr.:   Attack ISP Name: AOL.com

Attack Country: *External Attacker: Yes

*Incident Type: Intrusion   Vulnerabilities: Buffer Overflow

Entry Point: Network   Target Network:

Target Firewall: Target Host:

Target Service: Target Account:

Damage Type: Server Low Performance   Attack Profile:

Target OS Type: Unknown

*Description: Several major Internet sites, such as YAHOO.com, AMAZON.com, are
                  attacked by a group of hackers using "Distributed Denial of
                  Service" attack.

Update Incident

Local intranet

Fig. 10

Fig. 11

Fig. 12

Fig. 13A

Fig. 13B

Fig. 14

Fig. 15

Lunfish - Microsoft Internet Explorer provided by Internet Security Systems

File Edit View Favorites Tools Help

Links

POLICY ASSETS FIXES ALERTS SAFELI...

Incident Investigation Response Configure

Procedures Tools Procedure Steps

Configure Tools — 1505

Please select an available tool to edit and click Update to update an existing tool, or select [Add a New Tool], fill out the form, and click Create to create a new tool.

Tools: [Add A New Tool]

Tool Name — 1510

□ Incident Investigation Tool

□ Incident Response Tool — 1515

Tool's URL

Tool's Parsing URL — 1520

Tool's Path

Help Text

Tool Purpose — 1525

Platform Supported: Not Applicable

Tool Author

Create

Done   Local Intranet

1500

Lungfish - Microsoft Internet Explorer provided by Internet Security Systems

File   Edit   View   Favorites   Tools   Help

Links »

POLICY   ASSETS   FIXES   ALERTS   SAFE[...]

Incident   Investigation   Response   Configure

Procedures   Tools   Procedure Steps

1600

Configure Tools

1605

Please select an available tool to edit and click Update to update an existing tool,
or select [Add a New Tool], fill out the form, and click Create to create a new tool.

Tools: whois ▸

Tool Name: whois

☐ Incident/Investigation Tool   ☐ Incident Response Tool

Tool's URL: whois_interface.jsp

Tool's Parsing URL: parse_tool_result.jsp

Tool's Path: /usr/bin/whois

Help Text:
This is a Linux tool to find out the Internet domain
registration information.

◁ ▷

Tool Purpose: Find Domain Registration Info

Platform Supported: Linux ▾
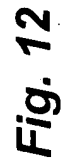
Tool Author: N/A

Update   Delete

Local intranet

Fig. 16

Fig. 17

Lungfish - Microsoft Internet Explorer provided by Internet Security Systems

File   Edit   View   Favorites   Tools   Help

| Links »

POLICY   ASSETS   FIXES   ALERTS   SAFELINK   INCIDENT

ISS

Incident   Investigation   Response   Configure

Procedure   Tools   Action Records   Document

Procedure: | DoS Investigation Procedure ▼ | Incident: | 963931422647–07/18/2000 10:40:00 AM–DDoS Attack on Major Internet Sites ▼ |

1800

1805

Select Step To Run

Please select a step and then click the "Select" button.

| Run Whols   ▼ | | Select |

1810

1815

Procedure - DoS Investigation Procedure

Click the hyperlink of the steps that you would like to execute.

Run Whols

RunNMap

Run Traceroute

Run NSLookup

Call FBI

Local intranet

Fig. 18

FIG. 19

DDoS Response Procedure

1. Kill Connection   ⟋2010
      (Reminder: Executing this step could interrupt on-line transactions that
      are in progress)

2. Reconfigure Firewall to Block Connection   ⟋2005

      Caution: Executing this step could also interrupt service to this
                site that are for legitimate uses

3. Call Police

FIG. 20

⟋2100A

Strategic Machine Table

Step to be Performed ⟋2105	Computer Internet Address Range ⟋2110	Tool Servers ⟋2115
Block Connection	00.000.00.00. - 100.100.100.100. 101.101.101.101. - 155.155.155.155. 156.156.156.156. - 255.255.255.255.	SC 1 SC 2 SC 3
Run Tripwire	00.000.00.00. - 100.100.100.100. 101.101.101.101. - 155.155.155.155. 156.156.156.156. - 255.255.255.255.	SC 3 SC 2 SC 1
Dump Network Packets	00.000.00.00. - 100.100.100.100. 101.101.101.101. - 155.155.155.155. 156.156.156.156. - 255.255.255.255.	SC 1 SC 3 SC 2

FIG. 21A

Security Agent	Status	Incident Name	Procedure Used	Incident Date	Procedure Start date	Incident Source	Target
Adams, James	Closed	DoS Attack on Firewall	DoS Response Procedure	11/15/99	11/25/99	123.456.789.909.	Yahoo!
Bastin, Knicole	In Response	DoS Attack on Corporate Web Server	Dos Response Procedure	11/15/99	11/29/99	455.326.8999.494.	AOL
Castle, Marie	In Response	Virus Attack on Accounting	Virus III Response	11/15/99	11/26/99	345.546.888.22.	Accounting
•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•

FIG. 21B

Fig. 21C

Start

2200

2205
Monitor Computer System for any Incident(s) and Obtain Incident Information

2210
Record Details of Incident with corresponding Date/Time Stamp

2215
Select Investigation Procedure

2220
Display Investigation Procedure and Record Investigation Steps & User Name with Corresponding Date/Time Stamp

2225
Pause Procedure?

Yes

2230
Pause Procedure

No

2235
Open Previously Recorded Incident?

Yes

2240
Perform Search and Obtain Incident Selection

No

2245
Select Response Procedure

2250
Display Response Procedure and Record Response Steps & User Name with corresponding Date/Time Stamp

2255
Add/Delete/Modify a Tool/Step?

Yes

2260
Obtain Tool/Step Data

No

2265
Add/Delete/Modify a Procedure?

Yes

No

2270
Obtain Procedure Data

2275
Run Tool Manually?

Yes

No

2280
List Available Tools, Run Selected Tools, Record Tool Results with corresponding Date/Time Stamp

2285
Output Record of Incident Monitoring and Response?

Yes

No

2290
Output Permanent Record of Recorded Incidents and Response

END

FIG. 22

_2220, 2250_

```
            ┌─────────────┐                    ┌──────────────────┐
            │  Start from │                    │ Execute Step/Tool│  2330
            │   Fig. 22   │                    │  with Located or │
            └──────┬──────┘                    │ Selected Computer│
                   │ 2300                       └────────┬─────────┘
                   ▼                                     │
         ┌──────────────────┐                            ▼
         │                  │                 ┌──────────────────────┐  2335
         │ Display Available│                 │ Record Steps Executed,│
         │    Procedures    │                 │   User Name or id,    │
         │                  │                 │  Results of Executed  │
         └────────┬─────────┘                 │  Steps, and Date/Time │
                  │ 2305                        │ stamp to local database│
                  ▼                             └──────────┬───────────┘
           ┌────────────┐                                  │ 2340
           │   Obtain   │                                  ▼
           │  Procedure │                      ┌──────────────────────┐
           │  Selection │                      │  Extract Portion(s) of│
           └──────┬─────┘                      │  Results for Incident │
                  │ 2310                        │     Identification    │
                  ▼                             └──────────┬───────────┘
            ┌──────────┐                                   │ 2345
            │  Display │                                   ▼
            │ Steps of │                       ┌──────────────────────┐
            │ Selected │                       │                      │
            │ Procedure│                       │   Display Output of  │
            └─────┬────┘                       │   Executed Steps     │
                  │ 2315                        └──────────┬───────────┘
                  ▼                                        │
           ┌───────────┐                                   ▼
           │Obtain Step/│                        ╭──────────────────╮
           │   Tool     │                        │ Return to Step 2225│
           │ Selection  │                        │  or 2255 of Fig. 22│
           └─────┬──────┘                        ╰──────────────────╯
                 │ 2325
                 ▼
         ┌────────────┐
         │   Locate   │
         │ Appropriate│
         │ Computer to│
         │   Execute  │
         │  Step/Tool │
         └────────────┘
```

FIG. 23

Start from Fig. 23

_2325_

_2400_

Access Table of Computers

_2405_

Compare Selected Step/ Tool with Table

_2410_

Matching Computer exist for Selected Step/Tool?

— Yes →

_2415_

Forward Incident and Command Data to Matching Computer

No

_2420_

Indicate Matching Computer does not exist and recommend an appropriate substitute Computer

_2425_

Obtain Selection of Computer

Return to Step 2330 of Fig. 23

FIG. 24

_2230_

Start from Fig. 22

_2500_

Obtain Incident Status Information

_2505_

Record Incident Status Information with Corresponding Date/Time Stamp

_2510_

Remove Incident from Active Status

Return to Step 2235 of Fig. 22

FIG. 25

_2240_

```
  ╱‾‾‾‾‾‾╲      ↙ 2240
 ╱ Start from ╲
 ╲   Fig. 22  ╱
  ╲_____╱
       │
       ▼        2600
┌─────────────────┐
│ Display Selection│
│ Criteria for Stored│
│    Incidents     │
└─────────────────┘
       │
       ▼        2605
┌─────────────────┐
│                 │
│ Obtain Selection│
│    Criteria     │
└─────────────────┘
       │
       ▼        2610
┌─────────────────┐
│ Display Incidents│
│ corresponding to │
│ Selection Criteria│
└─────────────────┘
       │
       ▼
  ╱‾‾‾‾‾‾‾‾‾╲
 ( Return to Step )
 ( 2245 of Fig. 22 )
  ╲_____╱
```

FIG. 26

_2260_

```
  ╱‾‾‾‾‾‾╲      ↙ 2260
 ╱ Start from ╲
 ╲   Fig. 22  ╱
  ╲_____╱
       │
       ▼        2700
┌─────────────────┐
│ Obtain Tool/Step │
│ Name to be Added/│
│ Modified/Deleted │
└─────────────────┘
       │
       ▼        2705
┌─────────────────┐
│Display Corresponding│
│Tool/Step Information│
│Fields (filled or unfilled│
│ depending on Tool │
│     Status)      │
└─────────────────┘
       │
       ▼        2710
┌─────────────────┐
│   Obtain Tool/   │
│      Step        │
│   Information    │
└─────────────────┘
       │
       ▼        2715
┌─────────────────┐
│ Save Tool/Step   │
│   Information     │
│                  │
└─────────────────┘
       │
       ▼
  ╱‾‾‾‾‾‾‾‾‾╲
 ( Return to Step )
 ( 2265 of Fig. 22 )
  ╲_____╱
```
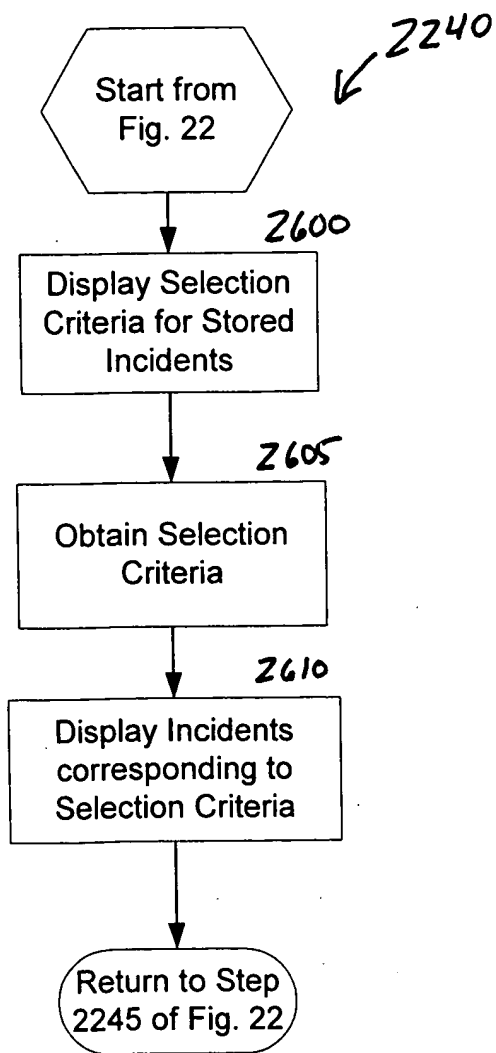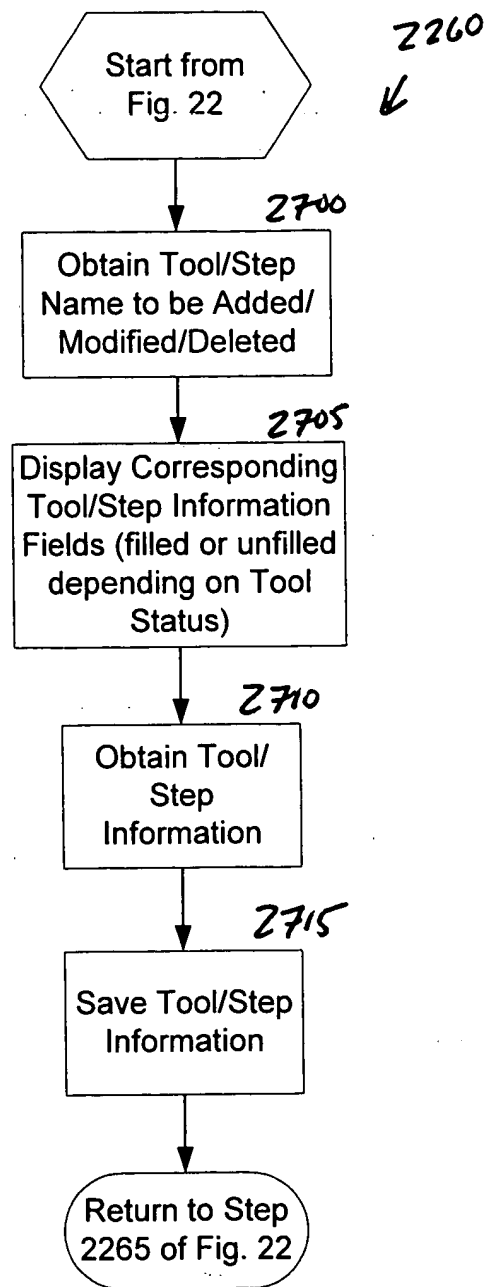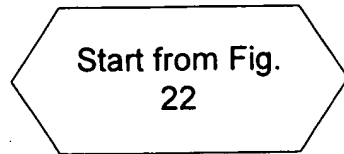
FIG. 27

2270

Start from Fig. 22

2800

Obtain Procedure Name to be Added/Modified/Deleted

2805

Display Corresponding Procedure Information Fields (filled or unfilled depending on Procedure Status)

2815

List Current Step/Tools and Available Step/Tools

2820

Add/Delete a Step/Tool in a Procedure or Create New Procedure?

No

Yes **2825**

Obtain Step/Tool Information

2830

Save Step/Tool Information

2835

Modify Step/Tool of Current Procedure?

Yes **2840**

Obtain Step/Tool Name to be Modified

2845

List Step/Tool Information

2850 No
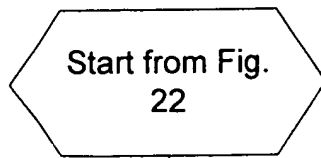
Obtain New/Modified Step/Tool Information

2855

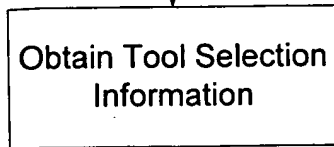Save Step/Tool Information

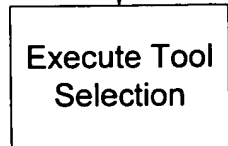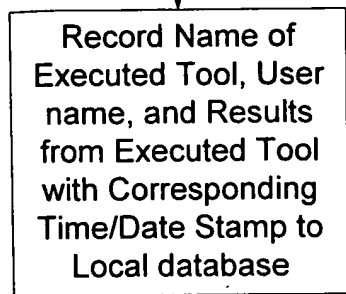Return to Step 2275 of Fig. 22

FIG. 28

2280

```
                    ┌──────────────────┐          ╱╲
                    │   Start from Fig. │        ╱    ╲        2925
                    │        22         │      ╱        ╲
                    └──────────────────┘    ╱  Continue    ╲
                              │              ╲  Running      ╱
                           2900              ╲ Tools Manually?╱
                              ▼                 ╲            ╱
                    ┌──────────────────┐  Yes     ╲        ╱
                    │  List Available   │◄──────────╲    ╱
                    │      Tools        │            ╲ ╱
                    └──────────────────┘             │ No
                              │                       ▼
                           2905                ┌──────────────┐
                              ▼                │ Return to Step│
                    ┌──────────────────┐       │ 2285 of Fig. 22│
                    │ Obtain Tool Selection│    └──────────────┘
                    │   Information     │
                    └──────────────────┘
                              │
                           2910
                              ▼
                    ┌──────────────────┐
                    │  Execute Tool     │
                    │   Selection       │
                    └──────────────────┘
                              │
                           2915
                              ▼
                    ┌──────────────────┐
                    │  Record Name of   │
                    │ Executed Tool, User│
                    │  name, and Results │
                    │ from Executed Tool │
                    │ with Corresponding │
                    │ Time/Date Stamp to │
                    │  Local database    │
                    └──────────────────┘
                              │
                           2920
                              ▼
                    ┌──────────────────┐
                    │ Display Results of │
                    │  Executed Tool     │
                    └──────────────────┘
```

FIG. 29